Solving 3x3 Systems of Eq. and Gaussian Elim. Homework

Solve the following systems by substitution:

1. \[
\begin{align*}
    x + 2y + 3z &= 6 \\
    y + 2z &= 0 \\
    z &= 2
\end{align*}
\]

2. \[
\begin{align*}
    2l + 2w + h &= 72 \\
    l &= 3w \\
    h &= 2w
\end{align*}
\]

Solve the following systems by elimination:

3. \[
\begin{align*}
    x - y + z &= -1 \\
    x + y + 3z &= -3 \\
    2x - y + 2z &= 0
\end{align*}
\]

4. \[
\begin{align*}
    x + y + 2z &= 3 \\
    2x + y + 3z &= 7 \\
    -x - 2y + z &= 10
\end{align*}
\]
Use the following word problem to write the system of equations. Do Not Solve!

5. A change machine contains nickels, dimes, and quarters. There are 75 coins in the machine, and the value of the coins is $7.25. There are 5 times as many nickels as dimes. Find the number of coins of each type in the machine.

Use Gaussian elimination to transform the following systems into triangular form.

6. \[
\begin{align*}
    x - 3y + z &= 6 \\
    2x - 5y - z &= -2 \\
    -x + y + 2z &= 7
\end{align*}
\]

7. \[
\begin{align*}
    x - 3y + 2z &= 11 \\
    -x + 4y + 3z &= 5 \\
    2x - 2y - 4z &= 2
\end{align*}
\]